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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,093	07/08/2003	Steven Verhaverbeke	4733 USA D01/TCG/TPG/OTHE	9641

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EXAMINER	
MARKOFF, ALEXANDER	

ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/616,093	VERHAVERBEKE ET AL.	
	Examiner	Art Unit	
	Alexander Markoff	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32,34,36-45,47-49 and 51-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32, 34, 36-45, 47-49 and 51-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 32, 37, 41, 47, 48, 51 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0905747.

EP 0905747 teaches a method as claimed. See entire document, especially Parts [007] – [0017] and [0024] – [0031].

The method comprises spinning a wafer and application to the spinning wafer an etchant or cleaning solution and a gaseous substance having a lower surface tension than water and rinsing and drying. The referenced steps are disclosed in the claimed order.

3. Claim 32, 37, 41, 47, 48, 51 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Mertens et al (US Patent No 6,491,764).

Mertens et al teach a method as claimed. See entire document, especially column, 2, line 36 – column 5, line 27 and column 5, line 61 – column 9, line 11. The method comprises spinning a wafer and application to the spinning wafer an etchant or cleaning solution and a gaseous substance having a lower surface tension than water and rinsing and drying. The referenced steps are disclosed in the claimed order.

4. Claims 32, 34, 36-38, 40-44, 47-49 and 53-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Lorimer (US Patent No 6,460,552).

Lorimer teaches a method as claimed. See entire document, especially Figures 4, 7, 7a, columns 7-12.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 39 and 45 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Lorimer in view of Chang et al (US Patent No 6,273,099).

Lorimer teaches the claimed method except for recitation of temperature of the rinsing water.

Chang et al teach that it was known to rinse the wafers with heated water. Chang et al further teach that rinsing with heated to the claimed temperature water improves cleaning, allows to eliminate some of the chemical cleaning steps and thereby provides considerable cost saving.

It would have been obvious to an ordinary artisan at the time the invention was made to rinse the wafers with heated water in the method of Lorimer with reasonable expectation of success in order to improve cleaning and to reduce the operation cost, because Chang et al teach that rinsing with heated water would provide such benefits.

9. Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Mertens et al or EP 0905747 in view of Chang et al (US Patent No 6,273,099).

Mertens et al and EP 0905747, having similar disclosure teach the claimed method except for recitation of temperature of the rinsing water.

Chang et al teach that it was known to rinse the wafers with heated water. Chang et al further teach that rinsing with heated to the claimed temperature water improves cleaning, allows to eliminate some of the chemical cleaning steps and thereby provides considerable cost saving.

It would have been obvious to an ordinary artisan at the time the invention was made to rinse the wafers with heated water in the methods of Mertens et al or EP 0905747 with reasonable expectation of success in order to improve cleaning and to reduce the operation cost, because Chang et al teach that rinsing with heated water would provide such benefits.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 32, 34, 36-45, 47-49 and 51-55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the

application was filed, had possession of the claimed invention. The applicants amended the claims to recite that the liquid or vapor having a lower surface tension than water is applied separately and not simultaneously with or while the liquid DI water and etchant or cleaning chemicals are applied. The original disclosure fails to support the limitation requiring application of the liquid or vapor having a lower surface tension than water while etchant or cleaning chemicals are applied

Response to Arguments

12. Applicant's arguments filed 5/29/08 have been fully considered but they are not persuasive.

The applicants again argue that the EP document and Mertens fail to recite that the liquid or the vapor produced from the liquid having lower surface tension than water is applied to the wafer not simultaneously with application of the DI water to the surface of the wafer.

The applied documents teach not simultaneous application of different liquids. See at least column 3, line 61 – column 4, line 16 of Mertens and the corresponding part of the EP document.

It is noted that the applicants rely on the part of the cited part of the document to state that a surface reducing substance is applied together with the liquid.

This is not persuasive because the teaching of the document is clear with respect that the surface reducing substance is for liquid removal and that the liquid chemicals are applied prior to liquid removal. The fact that the liquid removal is applied to the

processing liquid does not change the fact that this is a liquid removal and that the chemicals are applied in sequence. It is again noted that the IPA-water mixture is readable on the liquid having surface tension lower than water.

Further, the examiner would like to note that the applicants' arguments are more specific than the claims.

The claims recite that the liquid or vapor having a lower surface tension than water is applied separately and not simultaneously with **or while the liquid DI water and etchant or cleaning chemicals are applied**. Thus, the application of the referenced liquid or vapor while the liquid DI water and etchant or cleaning chemicals are applied is not excluded by the claims.

With respect to the rejections made over Lorimer the applicants again allege that the applied document does not teach not simultaneous application of DI water and and a vapor or a liquid having surface tension lower than water.

This is not persuasive. It is again noted that Lorimer teaches application of water vapor and/or water to the wafer separate from application of IPA-water vapor and/or liquid. The IPA-water mixture is readable on the liquid having surface tension lower than water. See at least column 7, lines 34-45, column 12, lines 5-30 and Figure 7a.

The applicants again argue that Lorimer teach application of vapor in a gaseous state, while the claims require application of a liquid DI water.

It is again noted that the applicants rely on their own unsupported statement that the steam does not condense until after it is applied.

The examiner again disagrees. Lorimer teaches cleaning with steam and steam condensate. Nothing on the record indicates that there is no condensation until application to the wafer can be found in the document. In opposite Lorimer teaches application, cleaning with condensate, at least some of the vapor is condensed. It si also noted that Lorimer teaches that the vapor entering the nozzle area 138 is quickly condensed (column 10, lines 34-37). Such supports at least some condensation of the vapor in the nozzle of Lorimer.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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